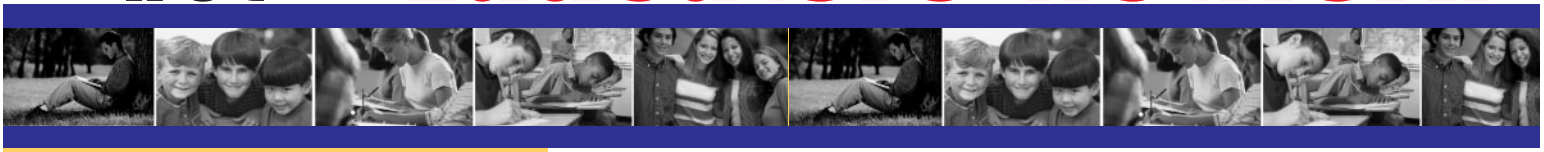
NASA LANGLEY RESEARCH CENTER'S OFFICE OF EDUCATION

Educators' Network™



NASA Langley Research Center's Office of Education proudly offers its quarterly electronic newsletter, the NASA Educator's Network (ed.net). The NASA ed.net furthers our mission to connect the precollege and university communities to unique NASA resources as well as provides NASA opportunities to stay connected to educators, faculty, and students. We hope that the NASA Educator's Network will continue to inspire you and the next generation of explorers as only NASA can.

Dr. Samuel E. Massenberg
Director
Office of Education

In This Month's Issue

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In the News

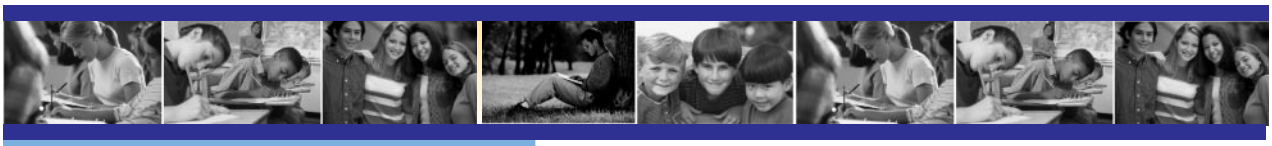
NASA and Norfolk State University Educate the Next Generation of Educators - *Contributed by Lonnie Young*

NASA Langley Research Center's Office of Education and Norfolk State University (NSU) hosted the eighth annual NASA/NSU Pre-Service Teacher Conference (PSTC) on March 27–29, 2003 at the Hilton Alexandria Mark Center in Alexandria, Virginia.

Over 700 students and faculty from historically black colleges and universities, Hispanic-serving institutions, tribal colleges and universities, and majority institutions attended the national conference that is designed to enhance the teaching of mathematics and science skills of future elementary and middle school teachers while incorporating technology into the curriculum.

The three-day event featured numerous workshops focusing on mathematics, science, and technology instruction facilitated by educators and NASA researchers. Students and faculty were also motivated to "reshape tomorrow's classroom" by several keynote speakers, including renowned professors and leaders, Dr. Calvin Mackie and Dr. Dennis Kimbro, Dr. Boyce Courtney Williams, Vice President of the National Council for Accreditation of Teacher Education, Mr. D.J. Vannas, president of Native Discovery Inc., and the first Hispanic NASA astronaut, Franklin Chang-Diaz. As part of the conference's culminating events, students attended a career fair with recruiters from school districts from across the United States.

The NASA/NSU PSTC is part of the NASA/NSU Pre-Service Teacher Program (PSTP) that also offers two-week summer residential institutes for college students at five NASA centers that include Langley (Hampton, VA), Ames Research Center(Moffett Field, CA), Kennedy Space Center (Cape Canaveral, FL), Marshall Space Flight Center (Huntsville, AL), and Stennis Space Center (Gulf Port, MS) as well as two tribal colleges: Sinte Gleska in South Dakota and Sitting Bull in North Dakota. Additional information about the NASA/NSU Pre-Service Teacher Program may be accessed on-line at **http://edu.larc.nasa.gov/pstp.**



ON THE AIR

NASA SCience Files™: The Case of the Challenging Flight (R)
Wed., Sept. 17, 2003
11 a.m. –12 Noon ET

NASA CONNECT™ **: The Centennial of Flight Special Edition: Problem Solving: The "Wright" Math (R)**
Thurs., Sept.18, 2003
11 a.m. –11:30 a.m. ET

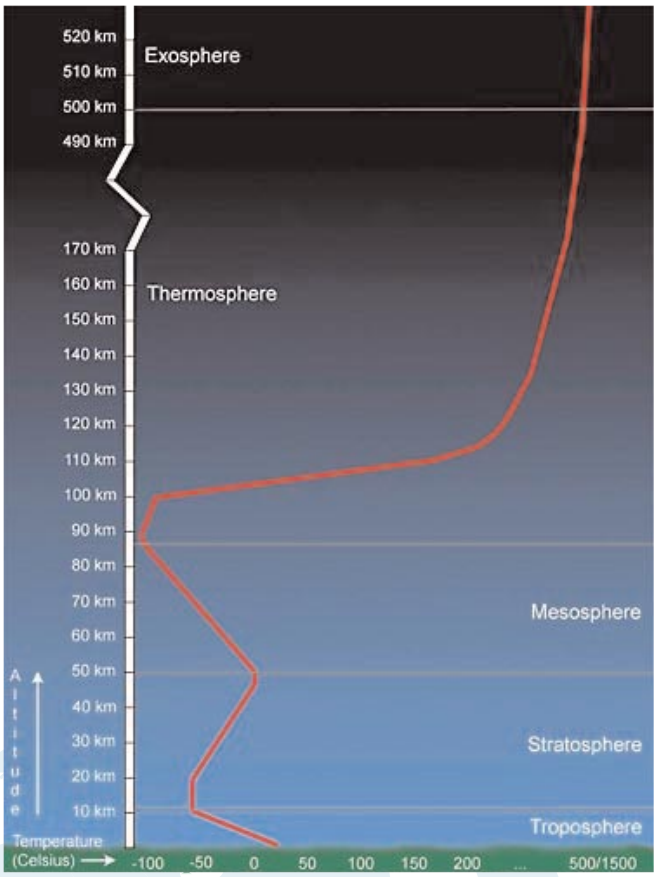
NASA's Destination Tomorrow™
Tues., Sept. 23, 2003
11:30 a.m. –12:00 Noon ET

For a complete listing of public, cable, and instructional television stations broadcasting NASA Kids' Science News Network™, the NASA SCience Files™, NASA CONNECT ™, and NASA's Destination Tomorrow™, check out NASA's Center for Distance Learning at **http://dlcenter.larc.nasa.gov.**

Did You Know?

LASERS and LIDAR

A laser is a light source that transmits light in a pencil-thin beam. This pencil-thin beam is produced when the atoms or molecules of a crystal such as a ruby, garnet, or other substances like a liquid or gas are excited in the laser cavity. Unlike other light sources, a laser can send the narrow beam over a long distance while maintaining both its size and direction. Today, lasers are used for a variety of purposes from personal entertainment, medical applications, manufacturing, and scientific discovery, to homeland security. At NASA Langley, researchers use laser-based systems in a special instrument called Light Detection and Ranging (LIDAR). A lidar is an instrument that uses short pulses of laser light to detect particles or gases in the atmosphere much like radar bounces radio waves off rain in clouds. A telescope collects and measures reflected laser radiation, leading to a map of the atmosphere's structure. Presently, NASA's lidars are used to study the Earth's atmosphere with extreme accuracy. A lidar can penetrate thin or broken clouds in the lower atmosphere, where humans live, letting researchers "see" the vertical structure of the atmosphere. A space-based lidar can provide global measurements of the vertical structure of clouds and atmospheric gases. Both ozone and water vapor are involved in many important atmospheric processes that can affect life on Earth, climate change, weather, the Earth's energy budget, and regional and global pollution levels. For more information about how NASA uses LIDAR, please visit **http://asdwww.larc.nasa.gov/lidar/lidar.html.**



A graphic illustrating the atmosphere's structure, starting with the troposphere at the Earth's surface.

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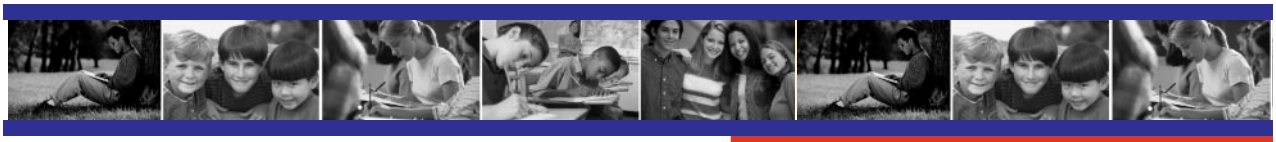


NASA NEWS BRIEF

Students Honored at NASA Student Involvement Program (NSIP) National Symposium

Twenty-six first place winners were honored for their entries in the NASA Student Involvement Program (NSIP) competition on May 4–7, 2003, during the NSIP National Symposium in Hampton, VA. Chosen from nearly 3,500 applicants from around the United States, this year's winners received an all-expense-paid trip to the national symposium where they made formal presentations of their projects, participated in an informal poster session, and attended an award dinner. NSIP is a national K–12 program consisting of six competition areas: Aerospace Technology Engineering Challenge, My Planet Earth, Design a Mission to Mars, Watching Earth Change, Science & Technology Journalism, and Space Flight Opportunities that link students directly with NASA's exciting missions of exploration and discovery. NSIP participation is open to all U.S. individuals and teams of children in grades K–12. More information about NSIP and the NSIP National Symposium is accessible on-line at **http://www.nsip.net/index.cfm.**

5th Annual Summer S'COOL Teacher Workshop

NASA Langley Research Center will host the 5th annual Summer S'COOL (Students' Cloud Observations On-Line) Teacher Workshop June 23–27, 2003. Participants will learn to apply science skills in observations and data analysis as they are introduced to the S'COOL program. The basics of atmospheric science, classification of cloud types, weather measurements using simple and sophisticated tools, and much more will be explored during this summer's workshop. Participating teachers will receive useful materials and experience meaningful field trips as they gain a new excitement for science. Teachers in grades 3–6, including those with limited science backgrounds, are encouraged to apply. More information about the Summer S'COOL Teacher Workshop is accessible on-line at **http://asd-www.larc.nasa.gov/SCOOL/summer2003**.

NASA Digital Media Lab Collaborates with the Virginia Air and Space Center

Located within the Office of Education at NASA Langley Research Center, the NASA Digital Media Lab (DML) is working closely with the Virginia Air and Space Center (VASC) in Hampton, VA in the area of digital learning. As a result of efforts by the Lab's management, two ClearOne Communication's V-There™ videoconferencing systems were donated to the VASC. One of the units is currently on loan to the Digital Media Lab and will allow for collaborative digital learning sessions between the VASC and Langley's DML. Dr. Richard Byles, Director of Education for VASC, is developing a multimedia classroom at the Center to integrate technology into its educational activities. Dr. Byles will be presenting various aerospace-related sessions to tribal schools in North Dakota as part of a grant the DML received from NASA Headquarters to extend NASA educational resources to underserved populations. Students who participate in sessions in the VASC multimedia classroom will be able to interact with tribal school students as a result of the acquisition of these videoconferencing systems. For more information, contact Bob Starr, Manager, Digital Media Lab, at **Robert.M.Starr@nasa.gov.**

Looking Ahead . . .

NASA's 15th Annual Planetary Science Summer School (August 4–8, 2003)

Who Should Attend? Science and engineering graduate students and post-doctorates
Jet Propulsion Laboratory, Pasadena, CA
Deadline: June 2, 2003
http://www.jpl.nasa.gov/pscischool

VINNY Competition

Who Should Compete? K–12 educators and students
Deadline: October 31, 2003
http://vinny.pcs.cnu.edu

Looking Ahead . . .

NASA Student Involvement Program (NSIP)
Who should apply? K–12 educators and students
Deadline: January 15 and 31, 2004
http://www.nsip.net/index.cfm

Send Your Name to a Comet
Who Should Submit Name? All Individuals
Deadline: February 2004
http://deepimpact.jpl.nasa.gov/

NASA NEWS BRIEF

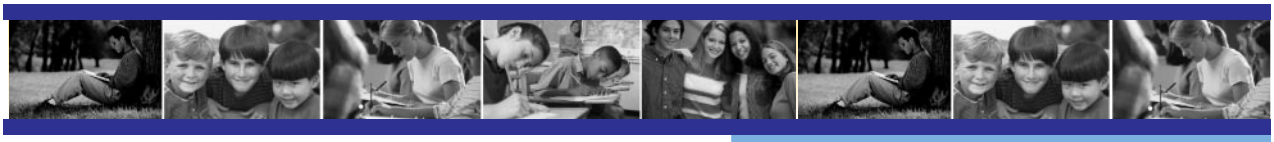
Rovers Prepare for Journey to Mars


NASA's Mars Exploration Rover

NASA successfully launched the first of two scientific rovers that are headed for the red planet from Cape Canaveral Air Force Station, FL. The first rover, named Spirit, launched on June 10, 2003. The second rover, named Opportunity, is scheduled to launch on June 25. The purpose of the Mars Exploration Rover (MER) Mission is to determine the history of climate and water at two sites on Mars where conditions may once have been favorable to life. Unlike the 1997 Mars Pathfinder and Sojourner Rover, the two MERs feature a unique design element – onboard instrumentation. Each 400-lb MER will function as a robotic field geologist, equipped to read the geologic record at its landing site and to learn what the conditions were like back when the rocks and soils there were formed. After a seven-and-a-half month journey, Spirit, is scheduled to travel through the Martian atmosphere on January 4, 2004, with Opportunity bouncing to a stop on the Martian surface January 25, 2004. Additional information about the Mars Exploration Rover Mission is accessible on-line at: **http://mars.jpl.nasa.gov/mer**.

2003 Harriett G. Jenkins Pre-Doctoral Fellowship Program Awardees Selected

NASA selected 21 graduate students to participate in the Harriet G. Jenkins Pre-Doctoral Fellowship Program for the 2003 academic year. The fellowship program consists of a 10-week hands-on research experience at a NASA center. The fellowship tenure is three years for doctoral candidates or two years for masters' candidates in several NASA-related fields, including aeronautics, astronomy, biology, Earth sciences, computer science, mathematics, physics, and engineering. The purpose of the Jenkins Pre-Doctoral Fellowship Program is to provide financial support to full-time, under-represented graduate students in science, technology, and education to allow them to continue their education in NASA-related disciplines. The United Negro College Fund Special Programs Corporation administers NASA's Jenkins Pre-Doctoral Fellowship Program. Additional information about the students and the fellowship program is accessible on-line at **https://www.uncfsp.org/NASA/Jenkins/Welcome.aspx.**



Calendar of Events

Plan on attending any of the following education conferences? If so, come learn more about how you and your students can explore the exciting world of science, technology, engineering, mathematics, and NASA.

Date	Conference	Location
June 15–27, 2003	NASA Pre-Service Teacher Institute **http://edu.larc.nasa.gov/psti**	NASA Langley Research Center Hampton, VA
June 25–26, 2003	NASA Langley's Annual Small Disadvantage Business/University Forum **http://edu.larc.nasa.gov/sdb**	NASA Langley Research Center Hampton, VA
June 29– July 2, 2003	National Educational Computing Conference **http://www.neccsite.org**	Seattle, WA
July 12–15, 2003	National Council of La Raza **http://www.nclr.org**	Austin, TX
July 20 – August 1, 2003	NASA Pre-Service Teacher Institute **http://edu.larc.nasa.gov/psti**	NASA Langley Research Center Hampton, VA

Best of the Web

Mathematics
World of Math Online
http://www.math.com

Science
Ask Dr. Science
http://www.wsu.edu/DrUniverse/contents.html

Engineering
Discover Engineering
http://www.discoverengineering.org/eweek/default.asp

Technology
Intel Innovating in Education
http://www97.intel.com/education/index.asp

NASA
Virtual Skies
http://virtualskies.arc.nasa.gov/

Geography
Mission Geography
http://www.missiongeography.org

Higher Education
University Business
http://universitybusiness.com

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Teacher Feature

"I love using NASA projects. They not only open the students' eyes to the WHYs and WHAT FORs, but they also allow them "get their hands dirty applying the concepts that I have taught... I love to promote NASA also. I believe that it is a very important part of our history and future. I often remind students that the calculators they are using to find data would not be possible if it hadn't been for great scientists. Keep up the good work."

Terri Ballew, Algebra II, Pre-Calculus, and Calculus Teacher, Permian High School, Odessa, TX.

Do you use or have you ever used NASA educational materials and programs for instructional enrichment or professional development? Send your comments and suggestions to NASA to improve the teaching and learning of science, technology, engineering, and mathematics (STEM). E-mail your comments to **dlcenter+newsletter@larc.nasa.gov** and please include the following information: name, subject taught, grade level taught, name of school, city, and state.

Suggestion Box

"Long distance learning such as videoconferencing allows students to interact with the outside world without ever leaving the classroom. In our case, our fifth grade students were involved in the NASA CERES (Clouds and the Earth's Radiant Energy System) S'COOL (Students' Cloud Observations On-Line) project since September 2002 and culminated their yearlong effort by linking up with NASA LIVE (Learning Through Interactive Videoconferencing Experiences). They had a wonderful opportunity to directly interact with a scientist, who is currently involved in the project, and many students walked away with not only a better understanding of the CERES project and how they contributed to it, but the experience sparked their natural instinct to pursue their interests in the fields of science, technology, engineering and mathematics". If you would like to view our students NASA LIVE experience, please visit our web site at **http://www.eicsd.k12.ny.us/staffweb/jkelley/Projects/Bryson/Index_Bryson.htm.**

Linda Bryson, 5th Grade Teacher, Laurelton Pardee School, East Irondequoit, New York

Do you have an effective instructional strategy that excites students to learn more about STEM? Would you like to offer some best practice ideas of how to use distance learning in the classroom? E-mail your suggestions to **dlcenter+newsletter@larc.nasa.gov** and please include the following information: name, subject taught, grade level taught, name of school, city, and state.